REMARKS

Favorable reconsideration of this application in light of the following amendments and remarks is respectfully requested.

The invention provides a system in which tags are identified in an efficient manner. A single transmission of an interrogation signal can be used to identify a tag within range. The interrogation signal has a number of pulses corresponding to the number of bits (or bit sequences) of the identification word for each tag. Thus, tags can be identified one by one at a rate of one tag per interrogation signal.

This is achieved by modifying the interrogation signal as replies are received from tags in range. In simplified terms, the transceiver sends out a signal "Is bit 1 of your identification word a 0?". If there is an answer, the next pulse of the interrogation signal is sent asking "Is bit 2 of your identification word a 0?". An "answer" is in the form of the return by one or more tags of a modulated version of the interrogation signal, and this represents a "yes".

If there are no answers to the first question, the question automatically becomes "Is bit 1 of your identification word a 1?". Only then is the next pulse of the interrogation signal sent, asking "Is bit 2 of your identification word a 0?".

This interrogation bit by bit of the interrogation words of the tags in range enables the system to identify an individual tag in range with one interrogation signal. The identified tag can then be made to switch to idle, so that the other tags can be identified.

Claims 1 and 10 have been amended to make this operation more clear. In particular, it has been made clear that the tags transmit modulated signals back to the transceiver. This is the way the tags answer the interrogation signal. It is now specified that each portion of the interrogation signal "is determined by the transceiver in

dependence on modulated responses from the tags to any previous portion". In other words, if there is no modulated response to the question "Is bit n of your identification word 0?", the question changes to "Is bit n of your identification word 1?". Alternatively, if there is a modulated response to the question "Is bit n of your identification word 0?", the question changes to "Is bit n+1 of your identification word 0?". It is further clarified that the modulated responses are "in response to the predetermined bit or bit pattern".

These features provide the efficient tag identification system of the invention.

Rejections under 35 U.S.C. §102(b)

Claims 1, 4-6, 10-11, 15, 16 and 23 have been rejected under 35 USC 102(b) as being anticipated by Denne.

Denne also discloses a system in which an individual tag ("transponder") is identified. A general interrogation signal is sent out and this is effected during a standby mode (see Denne at column 7 lines 18-22).

When a tag is in range and detects the general interrogation signal, it replies by sending its identity to the transceiver ("interrogator") (see Denne at column 7 line 37).

The transceiver may either receive this message error free or else it will be unable to assemble an error free message because of the presence of more than one tag within range (see Denne at column 8 line 25-32). In either case, the error free message, or the error-corrected message, is sent back by the transceiver in order to identify the tags in range.

If an error free message had been received, a single tag will then be identified.

If no error free message is received, the error-corrected identification received is sent by the transceiver a second time (see Denne at column 8 line 47). If a tag does not

recognise the identification, it switches off. A number of delays are introduced "indefinitely" until all of the incorrect tags have switched off, and "an uncontended situation arises" (see Denne at column 8 line 59). Only then can a single tag be identified.

When there are a number of tags within range, the system of Denne requires repeated transmission of an identity signal, before a tag in range can be identified. The collision of replies from the tags thus slows the identification process significantly. The identity signal sent by the transceiver does not change as it is sent. Instead, when collision has been detected, the transceiver is arranged to "continue data transmission for the remainder of the message" (see Denne at column 8 line 45).

It is therefore believed that independent claims 1 and 10 are now clearly distinguished over Denne. Denne fails to teach or suggest a system in which the interrogation signal adapts itself in response to replies from the tags, unlike claims 1 and 10, which require that each portion of the interrogation signal "is determined by the transceiver in dependence on modulated responses from the tags to any previous portion".

Accordingly, independent claims 1 and 10 are allowable over Denne. Claims 4-6, and claims 11, 15, 16, and 23 depend on claims 1 and 10, respectively, and are allowable for the same reasons as claims 1 and 10 and are further allowable in view of the additional limitations set forth therein.

Claims 18-20 and 22 have been rejected under 35 USC 102(b) as being anticipated by Dodd.

Dodd discloses a system in which tags ("transponders") are interrogated using their identification words, and by interrogating these identification words bit by bit. A first interrogations signal effectively asks all tags within range to indicate the value of the first bit of their identification word (see Dodd at column 8 line 15). This question is in

the form "What is your first bit?". Depending on the responses received, the interrogation unit asks all tags within range having a given value of the first bit to indicate the value of the second bit of their identification word. This question is in the form "For those tags with first bit = 1, what is your second bit?" (see Dodd at column 5 lines 28 to 30). The next question may be in the form "For those tags with first two bits = 10, what is your third bit?".

It can be seen that a large number of different interrogation signals are required before a single tag can be identified. In the examples of Figure 4 to 6, 16 interrogation signals are needed, each one progressively longer than the last, and each one requiring its own synchronising interrogation signal (see Dodd at column 5 lines 29,42).

The invention provides a much more efficient identification system. In order to clarify the features that provide this efficiency, claims 1 and 10 have been amended to require that "each tag is deactivated when not having said given value of the identification word at the predetermined bit or bit sequence". Basis for this can be found at page 6, lines 8-9.

By switching tags to a quiescent state (i.e. deactivating them) when they are not identified, tags are eliminated from the interrogation as the interrogation progresses. There is no need to resend information concerning the previous values of the identification word, as in Dodd. Instead, the interrogation signal can simply have a number of pulses corresponding to the number of bits (or bit sequences) in the identification words. Each bit (or bit sequence) value is interrogated only once in order for a single tag to be identified.

Claim 18 defines this single pulse for each bit or bit sequence. Claim 18 has the step "(f) deactivating tags having the second value at the respective bit which do not receive an extended communication signal". By this mechanism, a tag is again deactivated when not having the given value of the identification word at the predetermined bit or bit sequence. For example, if the transceiver has received an answer

to the signal "Is bit 1 of your identification word a 0?", then it moves on to the question "Is bit 2 of your identification word a 0?". By the method of claim 18, tags with a value 1 in the first bit are eliminated at this stage.

Since Dodd does not teach every element of claim 18, claim 18 is not anticipated under 35 U.S.C. §102(b). Dependent claims 19, 20, and 22 depend from independent claim 18 and are allowable for the same reasons as discussed above with regard to claim 18.

The invention as now claimed provides clear efficiency improvements over Denne and Dodd, either alone or in combination.

Rejections under 35 U.S.C. §103(a)

Claims 2, 3, 7-9, 12-14, 17, and 21 stand rejected under 35 U.S.C. §103(a) on the basis of Denne or Dodd in combination with various other references. For the reasons stated above with respect to claims 1, 10 and 18, Denne and Dodd are inapposite as references, and claims 2, 3, 7-9, 12-14, 17 and 21 are allowable.

Specification

The specification was objected to as lacking an abstract. Accordingly, an abstract accompanies this response.

The specification was also objected to as lacking antecedent basis for the claimed limitation in claim 8. In particular, the office action suggests that the limiter with hysteresis is not described in the specification. Accordingly, claim 8 has been amended to delete "a limiter with hysteresis."

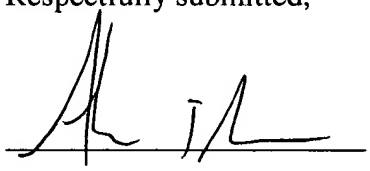
For the reasons set forth above, it is submitted that the claims are now in condition for allowance. Reconsideration of the claims and a notice of allowance are therefore requested. If any extension is required, applicant hereby petitions for same and

requests that any extension or other fee required may be charged to deposit account number 19-4972.

If the Examiner has any questions as to the allowability of the currently pending claims or if there are any defects which need to be corrected, the Examiner is invited to speak to the Applicant's counsel at the telephone number given below.

DATE: November 25, 2003

Respectfully submitted,



Alexander J. Smolenski, Jr.
Registration No. 47,953
Attorney for Applicant

Bromberg & Sunstein LLP
125 Summer Street
Boston, MA 02110-1618
(617) 443-9292
02497/00102 282084.1